

COMMERCIAL ITEM DESCRIPTION
SLEWING ARM DAVIT

ABSTRACT. This Commercial Item Description (CID) describes a slewing type electro-mechanical boat handling and boat stowage system (boat davit system) used for launch and recovery of single point pickup, 7,000 pound, Navy Standard 7 meter Rigid Inflatable Boat (RIB) depicted in reference (1) to be installed on FFG-7 class ships. Applicability to other Navy ships is possible pending design review of the winning offerer's davit. A stowage system shall be provided for the 7M RIB and shall be modular in design and capable of stowing the RIB up to and including sea state eight (8) conditions. The boat davit and stowage system shall include all motor controllers and ancillary equipment necessary to launch and recover the boat. The boat davit system shall be capable of launching and recovering the RIB, up to and including sea state five (5) conditions.

SALIENT CHARACTERISTICS. The boat handling and stowage system (boat davit system) shall have the following salient characteristics and meet the specified regulatory requirements. Where conflict exists between the salient characteristics of this CID and the specified regulatory requirements, the salient characteristics of this CID shall take precedence.

RATED CAPACITY. The boat davit system shall have a rated capacity of no less than 7,000 lbs. At the maximum outreach, the davit shall withstand a horizontal force of not less than 10 percent of the rated capacity of the davit, acting either forward or aft through or normal to the longitudinal centerline of the davit arm. Minimum factors of safety for load bearing components shall be defined as under the International Convention for the Safety of Life At Sea (SOLAS) reference (2).

CONSTANT TENSION. The boat davit winch system shall have an electrical operational mode that provides a means of maintaining a constant tension line pull on the boat falls. When in the constant tension mode, the davit winch shall in-haul and payout wire rope to compensate for boat motion on the waves during boat launch and recovery. The winch drum shall facilitate level spooling of the boat falls to avoid wire rope damage. Ram tensioning shall not be used to satisfy this requirement.

BOAT FALLS. The wire rope shall be rotation resistant steel. The construction of the wire rope shall be as specified in the ASTM A 1023/A 1023M-02, reference (3) or Federal Specification RR-W-410 reference (4). The boat falls shall be of sufficient length to launch and recover the RIB at the ships' design waterline at a 10 degree adverse list and shall not have less than 2 and 1/2 wraps of wire rope remaining on the winch drum. The distance from the boat deck to the design waterline at a zero (0) degree list is 24 feet and 6 inches (24' - 6").

BOAT DAVIT HOOK. The hook shall be an off-load quick-release safety type. The load bearing body of the hook from the lifting point to the throat shall be a one-piece design. The hook shall include a handgrip and a hook latch release lever lanyard. The hook throat shall accept the 7M hoisting ring, reference (5).

ELECTRICAL POWER. The boat davit system shall be provided with an electric variable speed, programmable logic motor controller that utilizes 440 VAC, 3 Phase, 60-Hertz electric power input. All actuators for the davit system shall be electro-mechanical. No hydraulic components shall be needed for operation of the davit. Safety and other control switches shall operate on 115 VAC or 24 VDC. Boat davit electrical amperage requirements shall not exceed 60 AMPS during any phase of davit operation.

ELECTROMAGNETIC INTERFERENCE. The boat davit system shall meet and demonstrate compliance with the requirements of MIL-STD-461 Rev E dated 20 August 1999 for Surface Ship, Metallic Hull installations. Equipment shall meet the above deck requirement. All documentation shall be in accordance with the respective data item descriptions cited in 461E Section 6:

Electromagnetic Interference Control Procedures (EMICP): DI-EMCS-80199B
Electromagnetic Interference Test Procedures (EMITP) DI-EMCS-80201B
Electromagnetic Interference Test Report (EMITR) DI-EMCS-80200B

OPERATION. The boat davit system shall be power operated by the electro-mechanical winch system. The davit system shall have an emergency mode of operation that utilizes Low Pressure (LP) air from the ship to operate the

davit in the event of electrical power loss. Additionally, the davit shall have a manual backup mode of operation to launch and retrieve the boat in a "dead ship" condition in accordance with SOLAS requirements in the event of electrical power and LP air loss. The boat davit shall be a single arm, deck mounted, slewing type capable of a variable slewing speed. Maximum slewing speed shall be 0.5 Rotations per Minute (RPM) of the davit arm. Under no condition shall failure of any component, with the exception of the hoist hook and boat fall, lead to dropping or free-falling of the boat. In the normal hoist/lower mode, the system shall have variable speed control with a maximum powered lowering speed of between 90 and 100 ft/min and a maximum powered hoisting speed of between 90 and 100 ft/min. The system shall be capable of power payout of an empty hook without birdnesting of the wire rope on the drum. A launching mechanism actuated from a position within the boat is not permitted.

SAFETY FEATURES. In addition to those safety features identified in SOLAS and normally provided by the manufacturer, the following additional safety features shall be provided:

1. Emergency disconnect switch.
2. Hoist two-blocked switch.
3. Slew limit switches
4. Empty winch drum limit switch
5. The brakes shall be interlocked with the hoist motors so that the brakes will set when one of the following conditions occur:
 - a. Any electrical motor is stopped
 - b. Failure of electrical power

SYSTEM ENVELOPE. The boat davit system, foundations, stowage and operating equipment shall be contained within a maximum envelope described in Figure 1. The davit shall be capable of hoisting the boat high enough out of stowage to allow the boat to clear both the stowage cradle and life rails. The maximum height of the davit shall be no greater than 17 feet – 0 inches.

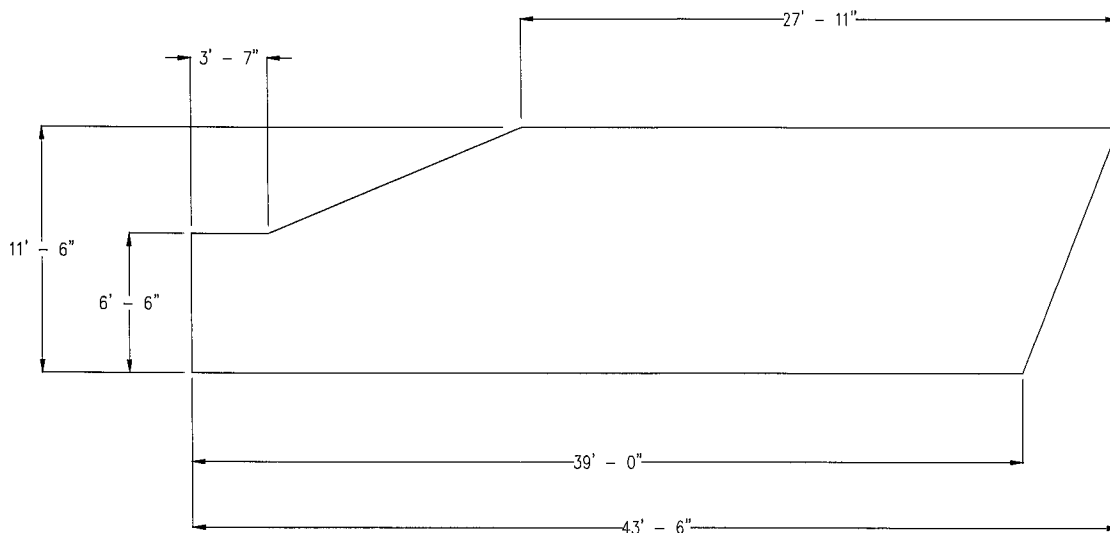


Figure 1 – FFG 7 Class Portside Boat Platform Envelop

PICKUP POINTS. The boat davit shall provide a hook for single point pickup of the 7M RIB outfitted with the “long” version boat-hoisting sling per reference (5).

BOAT HANDLING AND STOWAGE. The boat davit shall be capable of handling the Navy 7M RIB outfitted with the “long” version of hoisting slings. The boat shall maintain a bow-up attitude of 1.5 to 2 degrees and remain level

in the transverse direction while in stowage and during all phases of operation. The stowage position of the boat shall be completely inboard of the ship's gunwale. An aluminum stowage system shall be provided to secure the RIB while the ship is underway with hull form matching that depicted in references (6) and (7). Operation of the stowage system shall not require any personnel to go directly beneath the RIB. Lubrication points for all boat davit and stowage components requiring periodic lubrication shall be accessible from same deck that the davit and stowage will be mounted upon.

ENVIRONMENTAL CONDITIONS. The boat davit handling and stowage system shall be designed to operate in an exposed saltwater marine environment between ambient temperatures of -18 degrees and 49 degrees Celsius.

FASTENERS. All mechanical fasteners associated with boat davit components shall be made of stainless steel and use either lock washers or self-locking nuts.

NIGHT LIGHTING. Lighting shall illuminate the boats, boat stowage area, davit winch, and area of water into which it is to be launched. Red and white lighting is required.

EXTERNAL PROTECTION. All normally painted surfaces shall be prepared and painted in accordance with International Standards Organization (ISO) requirements and shall have a finish coat applied of Haze Gray, Formula 151 in accordance with MIL-DTL-24441/21.

All external electrical enclosures and control stations shall be provided with auxiliary weather resistant covers. The covers shall be made of fabric and designed to prevent direct weather exposure of the enclosures and control station when the davit is not in use.

QUALITY ASSURANCE PROVISIONS. The supplier is responsible for the quality of the boat davit system and shall certify and maintain objective quality evidence that the boat handling and stowage system offered meets this CID document, and that the boat davit conforms to the producer's own drawing specifications, standards, and quality assurance practices. The supplier shall specify the terms and conditions of the boat davit system warranty if applicable. The government reserves the right to require proof of such conformance prior to first delivery and thereafter as may be otherwise provided for under the provisions of the contract. In addition to SOLAS testing requirements the davit system shall be required to withstand a 200% Static load test and a 125% Dynamic load test upon completion of shipboard installation, based on the davit rated load of 7,000 pounds. Shipboard installation testing shall be established using the Naval Ship's Technical Manual Chapter 583, Section 9.6.3 (reference (8)) as guidance but shall be such that all modes of operation and safety features are test operated.

The davit system shall be subjected to the following endurance test at the vendor's facility to demonstrate its ability to meet the performance requirements specified in this CID document:

- a. The davit, winch, wire rope, and brake shall withstand a static load test of 200% of the rated load for a period of 10 minutes. No permanent deformation or winch slippage shall occur.
- b. The davit shall be dynamically tested with 125% of rated load at no rated speeds for through 3 complete cycles.
- c. The davit shall be tested with the rated load through 5 complete cycles at max operating speeds to and from the stowage. If test is interrupted by a malfunction, testing shall restart and continue for 5 full cycles.

LOGISTIC SUPPORT. The boat handling system logistics shall include the following:

- a. Technical Manual. The boat handling system technical manual shall include a description of various system components, operational information, functional information including mechanical and electrical components, electrical schematics and wiring diagrams, preventative and corrective maintenance procedures, and parts information including figures locating parts and corresponding parts list with OEM/ part numbers. The technical manual shall be provided in Adobe Acrobat format.

- (1) Spare Part Logistic and Provisioning Technical Documentation. A recommended list of spare parts shall be provided with supporting technical information for each identified spare part. Technical information shall include, as a minimum, vendor catalogs and drawings that identify each spare part with OEM part numbers.

(2) Interim Spare Parts. A list of interim spare parts shall be provided for items in the system that require frequent replacement due to wear or failure. A time frame of 24 months shall be used to determine the required interim spare parts. These items shall be provided and shipped with each unit purchased.

PRODUCTION SCHEDULE. The manufacturer shall be capable of producing and delivering a maximum of 9 boat handling systems in accordance with this Commercial Item Description (CID) per year.

REGULATORY REQUIREMENTS. The boat davit system shall meet United States Coast Guard approval in accordance with SOLAS 1974 and 1983 amendments.

PACKAGING AND MARKING. Preservation, packing, labeling, and marking shall be in accordance with standard commercial practices.

ACQUISITION REQUIREMENTS:

1. Installation control drawings, and loading specifications.
2. Operators, maintenance, and overhaul manuals.
3. List of recommended onboard repair and maintenance parts.
4. Supplemental Provisioning Technical Data.
5. OEM representative present for initial davit shipboard operational testing and subsequent crew training. Testing and subsequent crew training will be approximately 5 days (including travel time) and the OEM representative will perform the crew training. The following tentative training information is provided for estimating purposes:

Calendar Year 2007 through Calendar Year 2011. An estimated maximum of nine installations per year which may take place at the following locations: San Diego, CA; Norfolk, VA and Mayport, FL.

REFERENCES:

1. 7 Meter (24 FT) Rigid Inflatable Boat Installation Control Drawing. # 53711-583-5106524
2. International Convention for the Safety Of Life At Sea
3. Standard Specification for Stranded Carbon Steel Wire Ropes for General Purposes, ASTM A 1023/A 1023M-02
4. Wire Rope and Strand Federal Specification RR-W-410
5. 7 Meter Rigid Inflatable Boat Hoisting Arrangement and Details NAVSEA Drawing. # 53711-601-5106573
6. 7 Meter Rigid Inflatable Boat Hoisting Lines and Offsets NAVSEA Drawing. # 53711-101-5105391 Rev 1.
7. 7 Meter Rigid Inflatable Boat Shipping Cradle and Cover NAVSEA Drawing. # 53711-583-5105612 Rev F.
8. Naval Ships Technical Manual, S9086-TX-STM-010/CH-583